

Application No. 10/052,549

REMARKS

Claims 1-19 are pending in this application. By this Amendment, the Title and claims 1, 13, 17 and 18 are amended. Reconsideration based on the above amendments and following remarks is respectfully requested.

The courtesies extended to Applicant's representative by Examiners Pizarro and Cao at the interview held March 27, 2003, are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below and constitute Applicants' record of the interview.

Entry of the amendments is proper under 37 CFR §1.116 since the amendments: (a) place the application in condition for allowance (for the reasons discussed herein); (b) do not raise any new issue requiring further search and/or consideration (since the amendments amplify issues previously discussed throughout prosecution); (c) satisfy a requirement of form asserted in the previous Office Action; (d) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (e) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

I. THE SPECIFICATION SATISFIES ALL FORMAL REQUIREMENTS

The Office Action objects to the title for not being descriptive. The title has been amended to obviate this objection. Withdrawal of the objection to the specification is respectfully requested.

II. THE CLAIMS DEFINE ALLOWABLE SUBJECT MATTER

The Office Action rejects claims 1-4, 6-8, 10, 11, 13 and 14 under 35 U.S.C. §102(e) over U.S. Patent No. 6,248,633 to Ogura et al. (hereinafter "Ogura"); rejects claims 5, 12 and 15 under 35 U.S.C. §103(a) over Ogura in view of U.S. Patent No. 6,091,101 to Wang

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(hereinafter "Wang"); rejects claims 9 and 16-18 under 35 U.S.C. §103(a) over Ogura in view of U.S. Patent No. 4,372,031 to Tsaur (hereinafter "Tsaur"); and rejects claim 19 under 35 U.S.C. §103(a) over Ogura in view of Tsaur and further in view of Wang. The rejections are respectfully traversed.

Ogura does not disclose, teach or suggest a pair of the first and second control gates, adjacent each other in a second direction which intersects the first direction, are connected to each other through a pad-shaped common contact section, as set forth in independent claims 1 and 18, and similarly recited in independent claims 13 and 17.

The Office Action asserts that Ogura, in Figs. 4A-4G and 7A, discloses the invention recited in independent claims 1 and 13. Specifically, the Office Action asserts that Ogura, in Fig. 4E, discloses a common contact section for a pair of the first and second control gates [240]. Applicants respectfully disagree with the Office Action's interpretation of Ogura and its application to claims 1, 13, 17 and 18.

Applicants submit that in Ogura, because the two sidewall spacer gates 240 facing each other have an n+ junction 204 interposed inbetween, the gates 240 are not electrically connected with each other, as discussed below.

For example, in Ogura, a silicon oxide layer 234 is provided between a sidewall spacer gate 240 and a word gate 245 (see Ogura, at col. 4, lines 51-54). An ONO layer 230 is provided under the sidewall spacer gates 240 (See Ogura, at col. 5, lines 25-27, and Fig. 4C). A sidewall oxide spacer 233 and an oxide and/or nitride layer 235 are provided between the sidewall spacer gate 240 and a silicide layer 241 formed over the n+ junction 204 (see Ogura, at col. 5, lines 29-51 and lines 55-56, and Fig. 4D). The silicide layer 241 formed over the sidewall spacer gate 240 is covered with the oxide and/or nitride layer 235 (see Ogura, at col. 5, lines 55-56). Thus, because in Ogura, the sidewall spacer gate 240 is covered with insulating materials, Ogura, in Fig. 4E, fails to disclose or suggest a common contact section.

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Further, Applicants submit that Ogura, in Fig. 7A, fails to disclose or suggest a common contact section. Ogura, throughout its entire specification, is silent regarding any description or explanation of Fig. 7A. In Fig. 7A, a CG1 (supposed to be a control gate line) is electrically connected with two control gates CG facing each other with a diffusion interposed inbetween. However, Applicants respectfully submit that it is not at all apparent from reading the schematic diagram shown in Fig. 7A, that Ogura discloses, teaches or suggests that a common contact section is formed.

Moreover, Applicants submit that Ogura does not disclose, teach or suggest first and second control gates...are connected to each other through a pad-shaped common contact section, as set forth in independent claims 1 and 18, and similarly recited in independent claims 13 and 17. Support for this feature is found in the specification, at least at page 12, line 14 to page 13, line 12.

As discussed in the specification, generally, a contact hole (conductive layer 82) for electrically connecting the control gates 20 and 30 with the upper interconnect layer 80 is required to apply a voltage to the control gates 20 and 30. However, because the control gates 20 and 30 are in the shape of sidewalls, it is difficult to provide a contact hole directly on the control gates 20 and 30. Therefore, a pad-shaped contact section is formed so that a contact hole can be easily provided.

However, forming many pad-shaped contact sections increases the area of the chip. The structure having the features recited in claims 1, 13, 17 and 18 advantageously reduces the number of the contact sections and avoids an increase of the area of the chip by having a contact section shared by adjacent two control gates, i.e., without providing a pad-shaped contact section for each of the control gates. As a result, a single contact hole, i.e., a common contact hole, electrically connects the upper interconnect layer with the two adjacent control gates.

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Neither Wang nor Tsaur makes up for the deficiencies of Ogura.

Applicants respectfully submit that independent claims 1, 13, 17 and 18 are patentable over the applied art. Claims 2-12, 14-16 and 19, which depend from claims 1, 13, 17 and 18, respectively, are likewise patentable over the applied art for at least the reasons discussed above. Withdrawal of the rejections to claims 1-19 under 35 U.S.C. §102(e) and 35 U.S.C. §103(a) is respectfully requested.

III. CONCLUSION

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-19 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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JAO:GPS/hs

Attachment:

Petition for Extension of Time

Date: August 13, 2003

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